Lake Mead National Recreation Area
Environmental Education

FIELD PROGRAM

Grade 5

"Amazing Adaptations"

During a hike, students will take air and wind measurements in order to understand desert conditions, as well as discovering the daily pressures and adaptations of at least two common desert dwellers.

THEME

Desert survival requires specialized adaptations for all animals.

OBJECTIVES

Students will identify at least two desert weather conditions.
Students will measure, record, and compare air and ground temperatures and wind speed.
Students will compare at least two different animal adaptations.

VOCABULARY

adaptation - a physical or behavioral feature of an animal or plant that helps it survive in its habitat
diurnal - active during the day
estivation - the state of dormancy induced by heat and dryness of the summer
exothermic - having a body temperature that varies with the temperature of the environment (cold-blooded)
endothermic - having a body temperature that is independent of the temperature of the environment (warm-blooded)
hibernation - to pass the winter in a torpid condition in which the body temperature drops and metabolic activity is reduced
nocturnal - active during the night

BACKGROUND INFORMATION

It does not take long for anyone living in the Mojave Desert to figure out that it is a land of extremes. Though the desert has extremely high air temperatures during the summer days, it cools rapidly in the evenings. Winter temperatures can reach below freezing. There is little annual rainfall (about 4-6 inches yearly), high rate of evaporation, extreme air temperatures, and a varying degree of wind.

Desert animals have a variety of adaptations that help them survive. They can be conservers (store or concentrate their water), evaders (avoid the hottest part of the day), and/or excavators (construct burrows). Coyotes escape the heat of the day by being primarily nocturnal. Ground squirrels are diurnal and construct burrows underground. They can also keep cool by: washing their head with saliva, running with their tails flashed over their backs exposing the white underside thus reflecting the sunlight, and constructing burrows. Kangaroo rats are nocturnal and get all the water they need from the seeds they eat. Large lizards like the Chuckwalla and Desert iguanas can tolerate higher air temperatures. These lizards hibernate during cold months. Desert tortoises have the ability to hold their water enabling them to go long periods of time without it. They also burrow and estivate during the hottest part of the summer.

BEFORE THE FIELD TRIP ACTIVITIES

Have your students create a field journal in preparation for their trip to Lake Mead NRA. Journals provide a means of recording observations in the field and can be accessed at a later date for comparison studies. Have students make a list in their journals of weather conditions that make it difficult for people living in a desert environment. On another page have them write the following: wind speed=_____; air temperature=_____; ground surface temperature=_____; and burrow temperature=_____. Please be sure the students bring their field journals with them on the day of the field trip.

AFTER THE FIELD TRIP ACTIVITY

Now that your students understand some of the pressures desert animals face everyday, as a class compare adaptations of at least two other Mojave Desert animals.

REFERENCES

Cornett, James W., *Wildlife of the North American Deserts*
Nature Trails Press (1987)

MacMahon, James A., *Deserts*
Alfred A. Knopf (1986)

Schmidt-Nielsen, Kurt, *Desert Animals Physiological Problems of Heat and Water*
Dover Publications (1979)

MAKING A DIFFERENCE! Your students can begin to make a difference wherever they live! Have your class come up with a project using the experience from their field trip to Lake Mead National Recreation Area to show others that they care about our desert community.

Teachers! - check out our new web site with an extensive classroom section: http://www.nps.gov/lame/classroom